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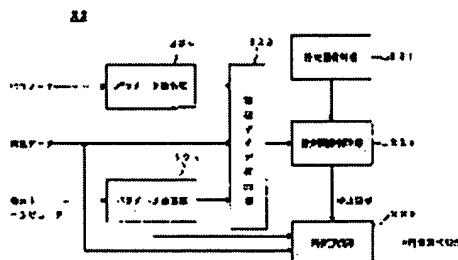
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(54) IMAGE-PROCESSING METHOD AND IMAGE-PROCESSING SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To allow the image-processing system to accurately discriminate whether or not image data are output inhibited data in the image-processing system, where image data are transferred among independent devices such as an image input device, a computer and an image forming device.

SOLUTION: Image data are stored in a storage device of a computer, while a parameter relating to an image size of an original is added to the image data. When the image data from an image-forming device is output, the image data given to an image side restoration section 22d is normalized by 100%, based on a parameter acquired by a parameter extract section 22c and a specific image-discriminating section 22e takes matching discrimination with reference data (data with respect to 100% sized image) stored in a dictionary 22f, so as to discriminate whether or not the image data are output inhibited data and gives a stop signal to an image-forming section 22b, when the image data are output inhibited data to inhibit the output of the data.



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CLAIMS

[Claim(s)]

[Claim 1] The image-processing approach also makes said information a pair and it was made to output it when it faced memorizing image data in the storage section which accompanies a computer, storage maintenance also of the information about the image size of the image data was carried out collectively and said image data was transmitted to other equipments.

[Claim 2] The image-processing approach according to claim 1 characterized by changing stored information into the predetermined contents at said storage section according to it at a case although it faces carrying out processing which corrects said image data and the correction processing is related with modification of said image size by said computer.

[Claim 3] The image-processing approach according to claim 1 or 2 characterized by carrying out recognition processing of whether a specific pattern is in said image data based on said information about the image data which faced outputting the image data stored in said storage section with image formation equipment, and was stored in said storage section, and which it is going to output.

[Claim 4] The recognition processing performed based on said information is the image-processing approach according to claim 3 characterized by normalizing in the criteria image size which constitutes criteria data based on the image size of said image data, and taking matching with the image data which normalized and said criteria data.

[Claim 5] The recognition processing performed based on said information is the image-processing approach according to claim 3 characterized by preparing two or more kinds of criteria data according to different image size, choosing said criteria data used out of a class based on the image size of said image data, and taking matching with the selected criteria data and said image data. [two or more]

[Claim 6] The image-processing approach given in any 1 term of claims 3-5 characterized by having asked for the output image size of the image which image formation is carried out and is printed out with said image formation equipment, and performing said recognition processing only when the output image size is predetermined within the limits.

[Claim 7] In the image processing system which stores the given image data in the storage section which accompanies a computer, and outputs the image data of storage circles to said storage circles When the part which memorizes the information about the image size of image data is prepared, said image data is corrected and modification of image size arises The image processing system characterized by also making said information into a pair and making it output it when outputting the image data which established a modification means to also change said information, and was stored in said storage section.

[Claim 8] The image processing system according to claim 6 characterized by having the function which combines the information about the image size at that time of reading, and is transmitted to the image data which the picture input device connected to said computer read in addition to the function to read a manuscript at said computer.

[Claim 9] The image processing system according to claim 7 or 8 characterized by establishing the image recognition means which carries out recognition processing of whether a specific pattern is in the image formation equipment connected to said computer or said computer in said image data based on said information about the image data which was stored in said storage section, and which it is going to output.

[Claim 10] The image processing system according to claim 9 characterized by taking matching with the data which normalized, and the criteria data stored in said dictionary while having further the dictionary which memorized the criteria data corresponding to criteria image size and said image recognition means' normalizing the image data in said criteria image size based on said information about the image data which

it is going to output.

[Claim 11] The image processing system according to claim 9 characterized by having further the dictionary which memorized the criteria data according to different image size, and for said image recognition means choosing said criteria data used out of a class based on the image size of said image data to output, and taking matching with the selected criteria data and said image data. [two or more]

[Claim 12] An image processing system given in any 1 term of claims 9-11 characterized by performing said recognition processing only when the output image size for which was equipped with a means to ask for the output image size of the image which image formation is carried out and is printed out with said image formation equipment, and it asked with the means is predetermined within the limits.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the image-processing approach and an image processing system.

[0002]

[Description of the Prior Art] The faithful copy which the image quality of a copy image reaches even the level which cannot be distinguished in a subject-copy image and a naked eye, and is applied by development of image formation equipments, such as a full colour copying machine in recent years, came to be obtained easily. Although the original copy of a bill, negotiable securities, etc. is socially forbidden in connection with it, it is necessary to think that the danger of being abused for forgery increases, and the forged arrester for preventing beforehand the danger of starting is developed variously (for example, image processing system indicated by JP,2-210481,A).

[0003] And the equipment of these various kinds registers the image about copy prohibition objects, such as a bill, beforehand, and carries out the recognition judging (various the concrete recognition technique is developed and differs) of whether the image applied into an input image is contained. And when the image to apply has been recognized, various copy prohibition means, such as smearing away the whole copy paper surface black, and outputting it, or suspending the copy processing itself, are taken.

[0004] By the way, since it is a principle to carry out the copy output of the body (manuscript) laid on the manuscript base except for copy prohibition objects, such as a bill, for the predetermined scale factor as full size faithfully, when the image (bill not but also legally image which can be copy) which resembled the bill temporarily is input, a copying machine needs to recognize it as it not be a bill, and needs to perform the usual copy processing as it is. Therefore, whenever [coincidence / at the time of performing a recognition judging] (threshold of a criterion) will become high inevitably.

[0005] Then, since the magnitude (configuration) of the image data given to an image processing system from the body side of a copying machine differs from the thing of the criteria data (actual size: 100% of rates of variable power) registered beforehand when it reduces or expands by the variable power function of a copying machine and copy processing is carried out, whenever [coincidence] falls and there is a possibility that it may be recognized as it not being a bill.

[0006] and -- the bill of the foreign country is unclear when only that (magnitude -- differing) by which the forged copy was carried out is seen alone, furthermore have not got it used to seeing usually although it

understands immediately since the magnitude differs if the deflection of the rate of variable power contrasts a real bill and directly and compares at several % - about about ten% -- still more -- ** -- it becomes.

[0007] Then, two or more sorts of reference patterns for example, according to each rate of variable power are prepared as equipment for corresponding to the variable power which starts conventionally, the rate information of variable power is acquired from the body of a copying machine at the time of actual copy processing, and there are some which were made to carry out matching processing based on the reference pattern according to the acquired rate of variable power.

[0008] Moreover, as shown in JP,6-237379,A, based on the rate information of variable power, carry out infanticide processing to image data (the number which thins out the thing which has a large dilation ratio is increased), the image after thinning out is made to become fixed magnitude, and there are some which aimed at matching with the image after the infanticide and a reference pattern. What is necessary is just coming to also prepare one kind of reference pattern, since this becomes fixed regardless of the magnitude of the image for a comparison (after thinning out) at the rate of variable power. And he thins out and is trying to generate the infanticide pattern at the time of processing using the shift register of a round mold.

[0009] A possibility that a bill, negotiable securities, etc. may be forged comes out by outputting the image data which stored it in the memory in a personal computer in connection with the resolution of the scanner which whose resolution of a printer also improved recently and was connected to computers, such as a personal computer, and it on the other hand having improved while reading the bill etc. with the scanner, and was stored in the starting memory after that to a printer. Then, the need of taking the cure to forgery etc. also about the printer used as the equipment which finally carries out image formation and outputs a forged object came out.

[0010]

[Problem(s) to be Solved by the Invention] However, in the case of the above-mentioned printer, the image processing system for forged prevention in the copying machine with which the countermeasures of the conventional various kinds are taken is inapplicable as it is from the various reasons shown below.

[0011] Namely, since the image formation section 2 which forms and outputs the read station 1 which reads a manuscript as shown in drawing 1, and the read image in the case of a copying machine is incorporated in the same equipment, In carrying out copy processing, it reads the manuscript first set on the manuscript base by the read station 1. When recognition processing predetermined on delivery and real time is performed in the recognition section 3 with the image formation section 2 and the manuscript has recognized the read image data to be specific manuscripts, such as a copy prohibition object, the above-mentioned predetermined copy prohibition processing is performed. In addition, actuation of each part is controlled by the control section 4.

[0012] And when forging using the copying machine to apply, it is almost the case that the "genuine article" about the candidate for forged is put on a manuscript base. And since image formation is carried out, it outputs and the information on to what% it expanded / reduced whether variable power processing of whether it copied by actual size was carried out again in the case of variable power also understands the control section 4 of the body of a copying machine while reading, as described above Being able to carry out recognition processing according to a scale factor, when the recognition section 3 acquires the starting information from a control section 4, recognition becomes possible [carrying out by being easy and highly precise].

[0013] However, in the case of a printer, although the image data to output is already stored in memory, such as a computer, since it is not understood whether the image is in what% of condition to the original manuscript, as described above, it cannot recognize that a predetermined image is during output processing by recognition processing corresponding to variable power.

[0014] On the other hand, since a printer is final output equipment in a forged action, if a formed object (image outputted) is not in a condition with difficult genuine article and discernment, even if it will not forbid an output, there is no actual harm. Therefore, what is necessary is to recognize that discernment is outputted by the difficult delicate variable power which is 90% - about 110%, for example, and just to be able to forbid an output, if it glances.

[0015] Therefore, in addition to the recognition processing section corresponding to 100%, two or more recognition processing sections corresponding to N % (N is the numeric value of the arbitration of 90-110 within the limits) are prepared. By carrying out recognition processing to the image data which it is going to output using the recognition processing section of these plurality, respectively, and judging a recognition processing result integrative It judges whether it is the image which should carry out output prohibition,

and, in the case of a prohibition image, it is possible to constitute so that predetermined output prohibition processing may be carried out like a copying machine.

[0016] However, carrying out multiple-times recognition processing using the one recognition processing section, changing a recognition algorithm requires time amount too much, and the processing of it on real time becomes impossible. Constructing a circuit so that only the number of the classes of rate (N %) of variable power which carries out recognition processing may prepare the recognition processing section and may carry out parallel processing in each recognition processing section on the other hand to the image data which it is going to output is also considered. If it is made the starting configuration, time amount which recognition processing takes can be performed similarly to a single thing. However, supposing the recognition section 3 corresponding to one kind of rate of variable power (actual size) has composition like drawing 2, recognition section 3' corresponding to the starting variable power will come to be shown in drawing 3, and circuitry will enlarge it, and it will cause cost quantity.

[0017] That is, when only actual size is taken into consideration, the recognition section 3 equips an input side with the resolution transducer 5, and he is trying to form the image which dropped the resolution of input image data on low predetermined resolution, and obscured it like drawing 2. And while becoming strong in a printing gap or a noise by carrying out recognition processing based on the image data obscured such, it is made to carry out recognition processing to a high speed on a scale of a small circuit. Moreover, the image data of the applied resolution which was obscured is once stored in memory 6. To the image data of the predetermined field stored in the memory 6, carry out pattern matching in the candidate pattern extract section 7, and a candidate pattern appropriate [specific] is extracted. When a candidate pattern is detected, information (a detecting signal, positional information, etc.) required for the data extraction control section 8 in delivery and the data extraction section 9 The image data of the predetermined field which made a note based on the extract signal from the data extraction control section 8, and was stored in 6 is extracted, and the image data extracted (logging) is given to the judgment section 10 of the next step. In the judgment section 10, matching with the reference pattern stored in the dictionary 11 is taken, and when it judges whether it is a specific pattern and judges it as a specific pattern, a detecting signal is outputted.

[0018] On the other hand, since the magnitude of the specific pattern which should be recognized differs in order to make it variable power correspondence As shown in drawing 3, each rate of variable power is received., respectively The candidate pattern extract sections 7a-7e, The data candidate extract control sections 8a-8e, the data extraction sections 9a-9e, and the integrated section 12 that the judgment sections 10a-10e and Dictionaries 11a-11e are needed, synthesizes the judgment result of each judgment sections 10a-10e further, and makes a final judgment are also needed. Thus, a circuit scale is enlarged.

[0019] Furthermore, since the rate of variable power of the output image to a real manuscript is unknown, in any case, it is necessary to give the recognition result in each rate (N %) of variable power to the integrated section 12, and it needs to carry out judgment processing synthetically. and since one thing with which the rate of variable power agreed among the recognition results give is whether to be or not , since the information (a recognition result) from a different thing start is also use for a judgment ingredient unlike the rate of actual image data of variable power , a possibility that recognize with a specific manuscript to breadth and the image formation action which is not forgery (incorrect recognition : it see too much), and the recognition range may carry out output prohibition processing is in many recognition results .

[0020] When the read station and the formation (output) section of an image are unified as one equipment like a copying machine further again Although what is necessary is to take only the rate of variable power into consideration since resolution is immobilization, the image data which this invention read by the target picture input device is transmitted to a computer. In an image processing system which outputs the image data stored in the computer to image formation equipment Since the class of connectable equipment is also various while the picture input device and image formation equipment which are connected to a computer have been independent, respectively, the resolution of a picture input device may differ from the resolution of image formation equipment. Then, even if a scale factor does not change, when resolution differs and image formation is carried out, without treating a difference of resolution, there is also a problem that magnitude will expand / contract.

[0021] The place which this invention was made in view of the above-mentioned background, and is made into the purpose Even if it solves the above-mentioned problem and transmits image data between isolated systems like a picture input device, a computer, and image formation equipment, what image data is correctly treated for with each equipment (an image processing is carried out) is made, and structure is

simple. Even if image sizes, such as a scale factor and resolution, are changed, a possibility of it being able to respond to it and incorrect-recognizing is controlled as much as possible, the image which should be forbidden carries out output prohibition and the usual image is to offer the image-processing approach and image processing system which can permit an output.

[0022]

[Means for Solving the Problem] when it face memorize image data in the storage section which accompany a computer, storage maintenance also of the information (it correspond to a "parameter" with the gestalt of operation with a scale factor, resolution, etc.) about the image size of the image data be carry out collectively and said image data be transmit to other equipments, said information also make into a pair and it made output it by the image processing approach which start this invention in order to attain the above-mentioned purpose (claim 1).

[0023] Moreover, by said computer, it faces carrying out processing which corrects said image data, and although the correction processing is related with modification of said image size, according to it, stored information can be changed into a case in said storage section at the predetermined contents (claim 2).

[0024] and as an image processing system suitable for enforcing the above-mentioned approach The storage section which accompanies a computer in the given image data (with the gestalt of operation) In the image processing system which stores in correspondence at "store 21a", and outputs the image data of storage circles to said storage circles When the part (it corresponds to a "header unit" with the gestalt of operation) which memorizes the information about the image size of image data is prepared, said image data is corrected and image size change arises In case the image data which established a modification means (it corresponds to the "header correction section" with the gestalt of operation) to also change said information, and was stored in said storage section is outputted, it is constituting so that it may output by making said information into a pair (claim 7). Moreover, it is having and constituting the function ("parameter setup section 20b, parameter registration circuit 20e", etc. being realized with the gestalt of operation) which doubles the information about the image size at that time of reading, and is transmitted to the image data which the picture input device connected to said computer read in addition to the function reading a manuscript at said computer (claim 8).

[0025] Here, what is being united with the interior of a computer like the memory hard disk in a computer as accompanying a computer, the storage with which the exterior became independent are included. Moreover, the "image size" as used in the field of this invention means the image size of the image registered into the storage section to a genuine article (manuscript).

[0026] Since the information about the image size of the image data is added to image data, it has by taking the starting configuration and image formation can be carried out in consideration of resolution when outputting to the equipment of resolution different, for example from an input unit, it can output in desired magnitude. Moreover, even when image data is transmitted between different equipment, with the equipment which received image data, the image can know the image size to the manuscript of a basis. When it is got blocked, for example, the image data which read the manuscript which is a picture input device and was obtained is given to image formation equipment through a computer and it prints out there, the image size of the image data of a processing object is known also with a picture input device, and the computer of another object and image formation equipment.

[0027] And if constituted like especially claim 2, since correction of image data is made within a computer, it will be followed even if it is a case so that the correction may change image size like zooming and information will be changed, the information on storage circles becomes a thing suitable for the always related image data.

[0028] Moreover, it faces outputting the image data stored in said storage section with image formation equipment, and may be made to carry out recognition processing of whether a specific pattern is in said image data based on the information about the image data which was stored in said storage section and which it is going to output (claim 3). And it is establishing the image recognition means which carries out recognition processing of whether a specific pattern being in the image formation equipment connected to said computer or said computer in said image data as an image processing system suitable for enforcing this approach based on the information about the image size of the image data which was stored in said storage section , and which it is going to output , for example (claim 9) . In addition, an image formation equipment or computer side may perform starting recognition processing. And as an example of the processing based on said information, there are some which are shown, for example in claim 4 or 5, and it is easy to be natural also except it.

[0029] The recognition processing performed based on said information is normalized in the criteria image

size which constitutes criteria data based on the image size of said image data, and matching with the image data which normalized and said criteria data is taken (claim 4). and as an image processing system suitable for enforcing this approach For example, information about the image data which tends to be further equipped with the dictionary which memorized the criteria data corresponding to criteria image size, and said image recognition means tends to output (with the gestalt of operation) It is based on being acquired by "electrical-parameter-extraction section 22c", and the image data is normalized in said criteria image size (with the gestalt of operation). it realizes in "22d of image size restoration sections" -- having -- it is constituting so that matching with the data which normalized, and the criteria data stored in said dictionary may be taken (claim 10). Although an example of this concrete configuration is explained to the detail by the gestalt of operation shown in drawing 9 and makes criteria image size 100% with the gestalt of that operation, it does not restrict to that value.

[0030] Moreover, two or more kinds of criteria data according to different image size are prepared, said criteria data used out of a class are chosen based on said information, and matching with the selected criteria data and said image data can be taken (claim 5). [two or more] And it is constituting so that it may have further the dictionary which memorized the criteria data according to different image size as an image processing system suitable for enforcing this approach, for example, said image-recognition means' may choose said criteria data used out of a class based on the image size of said image data to output and matching with that selected criteria data and said image data may be taken (claim 11). [two or more] An example of this concrete configuration is explained by the gestalt of operation shown in drawing 10 .

[0031] Since image size is added to image data in this invention so that claims 1, 2, 7, and 8 may prescribe Since the magnitude of the specific pattern in image data is also known, the area (magnitude) which carries out a field extract, for example can also be set up almost the neither more nor less and image size also understands comparison and recognition / judgment processing with criteria data, while the recognition algorithm to be used can also be managed with one, and possibility that unnecessary information will enter can control it as much as possible and being able to detect a specific pattern certainly -- incorrect detection - seeing -- passing -- ** -- there are nothings.

[0032] Furthermore, if image size is known, by normalizing in predetermined image size, the classes of criteria data can be reduced and memory space can be reduced so that it may specify, for example to claims 4 and 10. Moreover, although the amount of the part memory used increases like claims 5 and 11 when it has two or more kinds of criteria data, since image size is known, it ends with one, and as shown in drawing 3 , integrated processing becomes unnecessary, and recognition precision of criteria data actually used increases.

[0033] It asks for the output image size of the image by which image formation is carried out with said image formation equipment further again, and only when the output image size is predetermined within the limits, it may be made to perform said recognition processing (claim 6). And it is constituting as an image processing system suitable for enforcing this approach, for example so that said recognition processing may perform, only when the output image size for which was equipped with a means (it corresponds to "22d of image size restoration sections, 22g of image size calculation sections" with the gestalt of operation) asking for the output image size of the image which image formation's is carried out and is printed out with said image-formation equipment, and it asked with that means is predetermined within the limits (claim 12). Here, finally output image size means the magnitude (image size) to the original manuscript of the image printed and printed out by the form etc. Therefore, in outputting the image data stored in the storage section as it is, in case it becomes equivalent to the information stored in the storage section will be performed and asked for predetermined data processing, such as imposing the modification information on the image size performed in the case of output processing.

[0034] That is, a case so that the purpose which detects the image data containing a specific pattern may say that it is not necessary to detect when real magnitude is differed from extremely in the case of forged prevention, and when [which cannot be restored to the original image data even if amount of information decreases and it expands after that] it is reduced extremely, there is a demand that it is not necessary to detect. Therefore, when constituted like claims 6 and 12, as a result of asking for output image size, when only a certain thing carries out recognition processing within fixed limits, it is not necessary to perform recognition processing to a thing out of range, and abbreviation and simplification of recognition processing can be performed.

[0035] In addition, the matching processing in a recognition processing means extracts pattern-matching template matching and characteristic quantity, and can perform various kinds of processings besides being

as compared with it etc., and what is generally called recognition processing etc. includes it.

[0036]

[Embodiment of the Invention] Drawing 4 shows an example of the gestalt of operation of the image processing system concerning this invention. As shown in this drawing, this system reads the manuscript (subject-copy image) placed on the manuscript base by the picture input devices 20, such as an image scanner, is transmitted as image data to the computer 21 connected to it, and is stored in the storage in the computer 21. And the image data stored in the store is outputted to the image formation equipment (printer) 22 connected to the computer 21, and in there, image formation of it is carried out to a predetermined form, and it is printed out.

[0037] Moreover, the image outputted may output the image (image stored in storage) read by the picture input device 20 as it is, and by computer 21, various kinds of image processings are performed and it may be processed. Furthermore, between each equipment, when connecting by the direct cable, it may connect [not to mention] through various kinds of communication lines. Moreover, an image data transfer may be performed through various kinds of storages besides the above. Although the simplest configuration was shown, by the time it is furthermore outputted to image formation equipment finally in the example of illustration, two or more computers may intervene. Moreover, if three equipments 11, 12, and 13 do not necessarily need to be connected to coincidence and an example is shown, when the image data stored in a computer 12 will be supplied using storages, such as FD and CD-ROM, etc., a picture input device 20 is not connected with a computer 21.

[0038] And since acquisition of fundamental image data and the function of a transfer and the image formation processing [itself] are the same as the conventional image processing system, detailed explanation of each part is omitted.

[0039] Parameters, such as a scale factor (as opposed to a subject-copy image) of the image and resolution, are united, and it is made to send to the image data to transmit by this invention here. That is, although an image data transfer frame is sent in order for every Rhine from the 1st line, where the information about a parameter is given, he uses it as one transfer frame, and is trying to transmit an image data + parameter to a head in this example, as shown in drawing 5.

[0040] And in order to perform starting processing, the picture input device 20 was constituted as shown in drawing 6. That is, data are sent and received through host I/F20a in a computer 21. And since a parameter required for reading of the scale factor at the time of reading in a computer 21 side first, resolution, etc. is given when reading a manuscript, the parameter is registered into parameter setup section 20b through host I/F20a. And the subject-copy image put on the manuscript base is read using CCD20c, the read data are given to 20d of image-processing sections, and image processings, such as black pixel amendment and infanticide, are performed in there. In addition, the image processing in 20d of image-processing sections is performed based on the above-mentioned parameter set up by parameter setup section 20b. And although the image data generated by processing a request in 20d of image-processing sections will be transmitted to a computer 21 side through host I/F20a as it is if it is conventional equipment, he is trying to once give the image data which prepared parameter registration circuit 20e among Both 20a and 20d, and was generated in 20d of image-processing sections to parameter registration circuit 20e in this invention. And parameter registration circuit 20e reads parameters set as parameter setup section 20b, such as a scale factor and resolution, and forms a transfer frame as combined the parameter and image data which were read and shown in drawing 5. And the starting transfer frame is transmitted to a computer 21 side through host I/F20a.

[0041] In addition, although it was made to be given from a computer 21 side, when there is a function to input parameters, such as a scale factor, into a picture-input-device 20 side, even if it stores in setting section 20b the parameter stored in parameter setup section 20b in this example from the starting function, it is easy to be natural [a parameter].

[0042] He is trying to, show the DS in store 21a which stores image data based on the transfer frame sent from a picture input device 20 in drawing 7 by the computer 21 side on the other hand. That is, although it was only the image section which stores image data when it was the former, a header unit is prepared in the head of the image section. And he stores the parameter in the transfer frame of drawing 5 in a header unit, and is trying to store in the image section the image data which continues after that. In addition, as concrete data stored in a header unit, there are the number of horizontal-scanning images (pixel number), the number of vertical-scanning images (pixel number), a scale factor, resolution, etc. so that it may illustrate.

[0043] Furthermore, it also has header correction section 21b which corrects the data stored in the header

unit. This header correction section 21b performs various kinds of applications installed in the computer 21, when the image data stored in store 21a is corrected, corrects the data in a header unit if needed, and is made to make them that whose condition (image size) of the image data stored in the image section the information always stored in the header unit suited.

[0044] And the concrete function has become like the flow chart shown in drawing 8. That is, while a computer 21 reads the image data stored in store 21a, when various kinds of image processings are performed and it stores data in the image section after that, the above-mentioned image processing judges whether it is a thing related to image size (ST1). And in not being related to image size, it ends processing of header correction section 21b as it is.

[0045] On the other hand, it progresses to step 2, and from a header unit, in the processing related to image size, a parameter is read, and predetermined parameter value is changed into it (ST2, ST3). The current scale factor registered into the header unit is 50%, and when the image data stored by the image processing is reduced to 70%, this modification processing calculates $0.5 \times 0.7 = 0.35$, and asks for 35% of the result of an operation. And parameter value is changed into the value which made such and was calculated, and the parameter after modification is written in a header unit (ST4).

[0046] The processing so far is processing of header correction section 21b, and when not changing image size after performing starting processing, various kinds of image processings to the image data stored in the actual image section as it was will be performed. By doing in this way, the information about image sizes, such as a scale factor of the current image data stored in the image section to the original subject-copy image, will always be stored in a header unit.

[0047] Drawing 9 shows an example of the internal structure of image formation equipment 22. Since the parameter (assignment of a scale factor, resolution, etc.) for [the] carrying out image formation is given from a computer 21 when an image output instruction is received from a computer 21 as shown in this drawing, the starting parameter is stored in parameter setup section 22a. The image data of the object which carries out image formation is read from the image section in storage, and it stores in image formation section 22b. And image formation section 22b performs various kinds of image processings according to the parameter given from parameter setup section 22a, and prints them out in a form. Since the starting configuration is the same as that of the conventional thing, detailed explanation of each part is omitted.

[0048] And he prepares electrical-parameter-extraction section 22c, and is trying to acquire the parameter about the image which was stored in the header unit in storage 21a and which is going to carry out image formation (printing) in this invention. And parameters, such as a scale factor of the current image data stored in store 21a of the computer 21 acquired by electrical-parameter-extraction section 22c, and the parameter (parameter for carrying out an image processing to image data) stored in parameter setup section 22a are given to 22d of image size restoration sections. Furthermore, the image data stored in store 21a is also given to 22d of this image size restoration section.

[0049] And he is trying to send the given predetermined parameter and the image data which restored to the image data of 100% of image size to a subject-copy image based on image data, and was restored to specific image judging section 22e in 22d of this image size restoration section. In addition, in this example, the image data stored in image formation equipment 22 at store 21a is given as it is, and since the image processing for making a final scale-factor change as which it was instructed from the computer 21 performs by image formation section 22b, the scale factor of the image data given to 22d of image size restoration sections has parameter value stored in the header unit in store 21a. Supposing the scale factor which followed, for example, was stored in the header unit is 125%, when the given image data is reduced 80%, it will be restored to 100% of image to a subject-copy image.

[0050] In addition, when resolution differs, and output processing is carried out as it is, the magnitude of the image finally outputted differs [even if there is no modification to a scale factor etc.,]. That is, it will be reduced, if the image data of each Rhine is used as it is and outputted, when it is going to output the image read at resolution 400dpi and 100% of scale factors by actual size to the image formation equipment of 600dpi as it was. Then, the data of actual size are obtained by outputting by performing an image processing which interpolates data suitably and is not reduced. It is the same also at the time of variable power, and the processing in which it interpolates suitably or thins out is needed. And in this example, since it also has as a parameter the information about the resolution about the image data stored in store 21a, in consideration of resolution, it can output for a desired scale factor. And the processing for it can be beforehand taken into consideration by the computer 21 side, it enables it to set each parameter as parameter setup section 22a, or the information on the header unit of storage 21a can be given to image

formation section 22b, and it can also respond in there. If the information about the applied resolution is also taken into consideration further again and restoration processing is carried out, a more accurate judgment can be performed.

[0051] Furthermore by this example, the image data which it will finally be formed by image formation section 22b, and the scale factor stored in the header unit will output at 125% supposing the directions from a computer are "reducing 50% and outputting the image data stored in the image section" becomes 62.5% of thing to a subject-copy image. Then, when false-image prevention of a bill, negotiable securities, etc. is considered, for example, what has no less than 62.5% small from real magnitude has a look, and turns out to be imitation. Then, when starting, it may be presupposed that it is good without suspending an image output. Since it corresponds to such a demand, it is based on parameters, such as a scale factor given from parameter setup section 22a and electrical-parameter-extraction section 22c. It asks for image sizes, such as a scale factor to the subject-copy image of the image actually outputted. In outside the range where it is fixed, (for example, 90 - 110%, 95 to 105 etc.%, etc.) Since an output is permitted irrespective of whether manuscripts are prohibition objects, such as a copy, even if it does not perform restoration processing in 22d of image size restoration sections or carries out, it is made not to send to specific image judging section 22e. Of course, you may make it the starting function always forbid an image output regardless of the magnitude of the image outputted in the case of prohibition objects, such as a copy, without preparing.

[0052] Specific image judging section 22e outputs a stop signal to image formation section 22b, when it judges whether the specific image exists in the image data given from 22d of image size restoration sections and judges with taking matching with the reference pattern stored in 22f of specific image dictionaries, and a reference pattern and an in agreement and similar specific pattern existing in the restored image data. And image formation section 22b which received this stop signal suspends an output, smears away the whole or a part black etc., or performs predetermined processing of compounding and outputting predetermined alphabetic character and marks (a "sample", "counterpart", etc.) understood to be imitation.

[0053] And the dictionary data of the image data (restoration) given to specific image judging section 22e in this example stored in 22f of specific image dictionaries to a subject-copy image regardless of the image size which it is actually going to output since it is 100% (actual size) of thing are also always good only at 100% of thing. Furthermore, in order to compare 100% of image data with a reference pattern such, memory space and a circuit scale are reduced, judgment processing is also easy, and can be performed in a short time, and, moreover, precision also becomes high. in order [in addition,] to make it the reduction of area with image data with actual normalizing to 100% (restoration) become small -- it is -- 90%, 110 etc.%, etc. -- even if -- it is good and you may make it normalize in the image size of the arbitration of further the range inside and outside And the magnitude of the reference pattern stored in a dictionary should just also respond to the scale factor in that case. In addition, it seems that the judgment processing in specific image judging section 22e should be shown in drawing 2, and also various kinds of recognition algorithms can be performed.

[0054] Drawing 10 shows another configuration of image formation equipment. In this example, it is different from the above-mentioned gestalt of operation, and two or more 22f [of dictionaries] ' corresponding to image size is prepared. And he is trying to choose the dictionary used as the comparison criteria at the time of performing judgment processing by specific image judging section 22e' based on image sizes, such as a scale factor of the image data given. And in specific image judging section 22e', the comparison with the criteria data stored in the selected dictionary and the given image data is taken, and it asks for whenever [coincidence].

[0055] Also by this example, based on the parameter information given from parameter setup section 22a and electrical-parameter-extraction section 22c, it asks for the actually outputted image size, and when predetermined is out of range, it is made not to perform judgment processing by 22g of image size calculation sections at specific image judging section 22e'. That is, from 22g of image size calculation sections, the information on whether judgment processing is performed, and in carrying out, the information about the scale factor of the image data given etc. is given to specific image judging section 22e', and it performs predetermined judgment processing by specific image judging section 22e' if needed based on the starting information.

[0056] In addition, with this gestalt, it becomes unnecessary not to restore image data and to normalize it like the above-mentioned gestalt of operation, at predetermined image size (the image data in a store is given to the direct specification image judging section), down stream processing is reduced, and a high

speed and exact processing are attained more from choosing the dictionary of the same image size as image data. However, since two or more dictionaries are prepared, memory consumption is mostly needed. In addition, since the operation effectiveness is the same as the gestalt of operation shown at above-mentioned drawing 9 in other configuration lists, the detailed explanation is omitted in them.

[0057] In addition, it is easy to be natural, even if it incorporates the processing sections other than image formation section 22b in the computer, and it judges whether an image output is carried out by computer, and outputs the image data corrected to the magnitude of infanticide or a request to the image data stored in store 21a and makes it print out based on it with image formation equipment 22 among the internal structures of the image formation equipment 22 shown in drawing 9 and drawing 10, in outputting.

[0058]

[Effect of the Invention] As mentioned above, in the image-processing approach and image processing system concerning this invention, where the information on image size is added to image data, in order to transmit to a data storage maintenance list, an image can be correctly treated also between the equipment with which the independent specifications differ. Moreover, by performing an image processing based on the added image size, even if it can perform recognition processing on real time and image sizes, such as a scale factor and resolution, are changed on the way with easy structure, a possibility of it being able to respond to it and incorrect-recognizing is controlled as much as possible, output prohibition of the image which should be forbidden can be carried out, and, as for the usual image, an output can be permitted.

[Translation done.]

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the example which mounted the virtual processor (recognition section) in the conventional copying machine.

[Drawing 2] It is drawing showing an example of the internal configuration of the recognition section.

[Drawing 3] It is drawing explaining the conventional trouble.

[Drawing 4] It is drawing showing one gestalt of the image processing system concerning this invention.

[Drawing 5] It is drawing showing an example of the transfer frame at the time of transmitting image data.

[Drawing 6] It is drawing showing an example of the internal configuration of a picture input device.

[Drawing 7] It is drawing showing the storage and the header correction section in a computer.

[Drawing 8] It is the flow chart which shows appointment of the header correction section.

[Drawing 9] It is drawing showing an example of the internal configuration of image formation equipment.

[Drawing 10] It is drawing showing an example of the internal configuration of image formation equipment.

[Description of Notations]

20 Picture Input Device

20e Parameter registration circuit

21 Computer

21a Storage

21b Header correction section

22 Image Formation Equipment

22c Electrical-parameter-extraction section

22d Image size restoration section

22e, 22e' Specific image judging section

22f, 22f' Specific image dictionary

20g Image size calculation section

[Translation done.]

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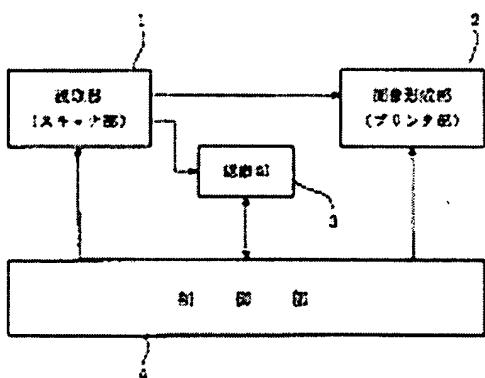
1. This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.

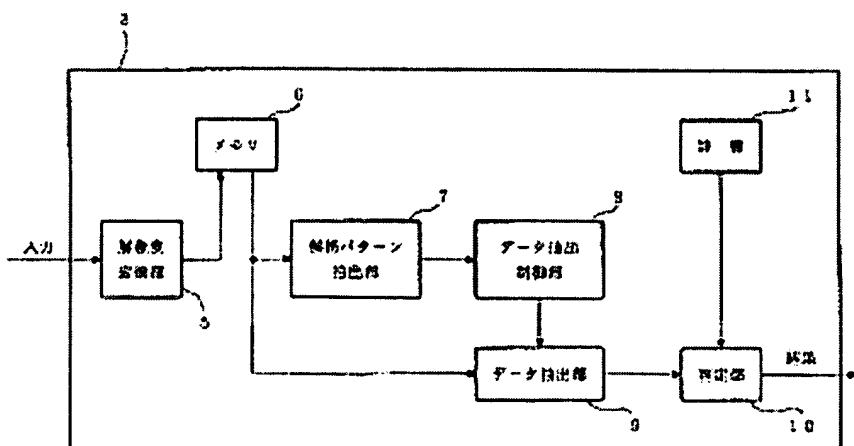
3. In the drawings, any words are not translated.

DRAWINGS

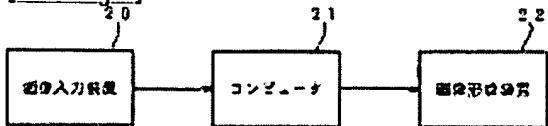
[Drawing_1]



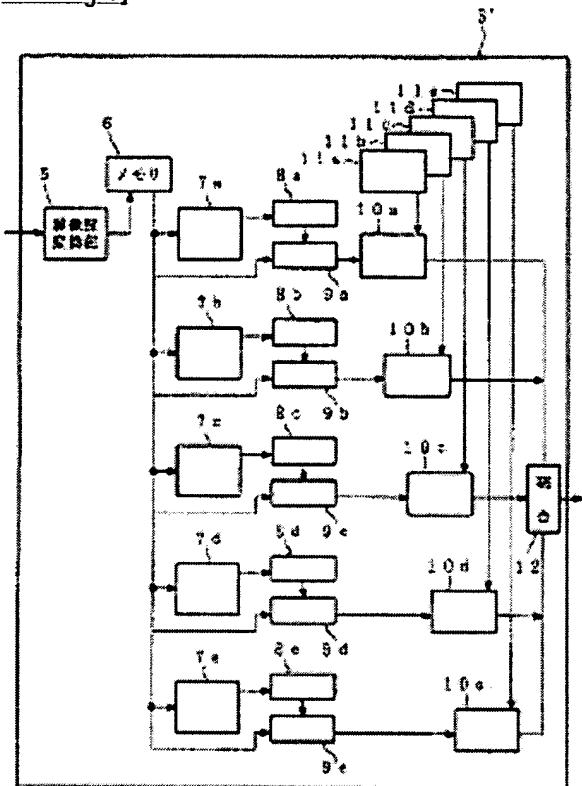
[Drawing_2]



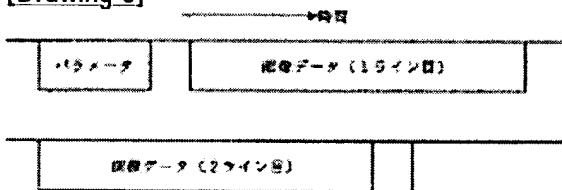
[Drawing 4]



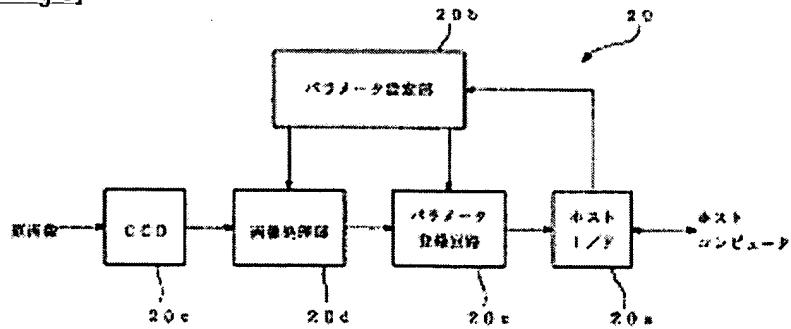
[Drawing 3]



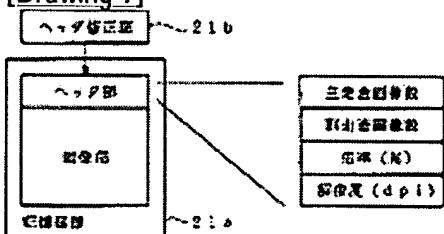
[Drawing 5]



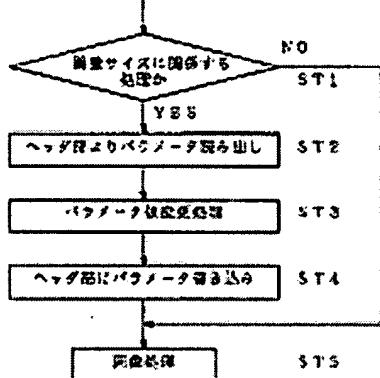
[Drawing 6]



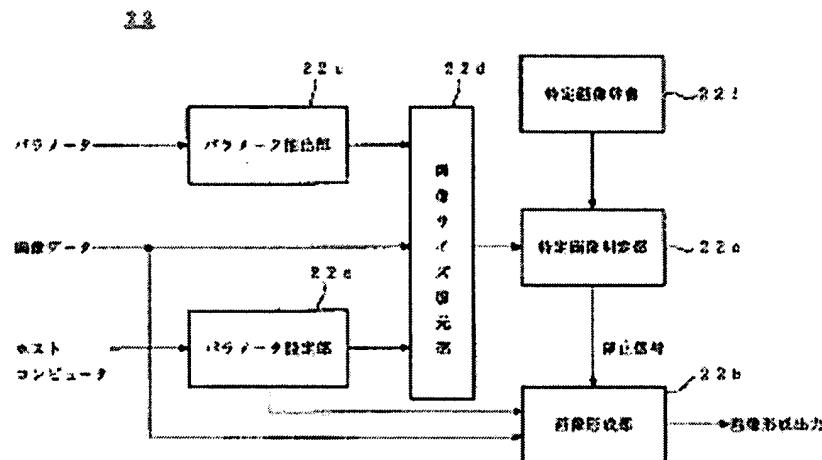
[Drawing 7]



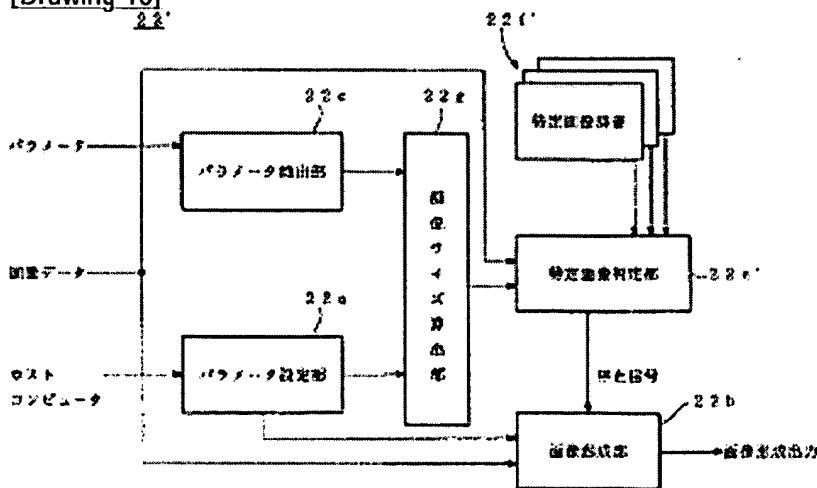
[Drawing 8]



[Drawing 9]



[Drawing 10]



[Translation done.]